

SCHEDULE MANAGER™

USER'S MANUAL

SOF-706 Manual
DOC-031
Rev. 1.3

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TABLE OF CONTENTS

Chapter 1	1
Getting Started.....	1
General Computer Environment.....	1
Backing Up the Software	1
Introduction	1
Chapter 2	2
Running Schedule Manager	2
1. Select Configuration Directories.....	2
2. Hardware Setup	3
3. Create a New Component	3
4. Create a New Procedure	3
5. Run an Experiment	3
Chapter 3	4
Creating a New Hardware Configuration	4
Med Card Setup	4
Interface Configuration	5
Chamber Maximum Inputs/Outputs.....	5
Input/Output Labels	6
Chamber Configuration	7
Chapter 4	9
Creating a New Component	9
Input Specifications.....	11
Reinforcement Specifications	12
Output Specifications.....	13
ANL-926 Specifications.....	14
Saving Changes	14
Chapter 5	15
Creating a New Procedure	15
Designing a Procedure	16
Inserting a Component	17
Defining Component Exiting Conditions	17
Inserting a Repeat Loop.....	18

Inserting a Start or End Block	18
Viewing SoftCR Links	19
Removing Items from Component List	20
Saving the Procedure.....	20
Chapter 6	21
Running an Experiment.....	21
Changing the Loaded Procedures.....	22
Starting Chambers	23
Viewing Detailed Chamber Information.....	23
Configuring the Runtime Screen	23
Pausing Chambers.....	24
Stopping Chambers	24
Appendix A.....	25
Schedule Manager Menus.....	25
Selecting Menu Items	25
Menu Items.....	25
Appendix B.....	28
Definitions	28
File Types	28
Types of SoftCR Links	28
Types of SoftCR Timing.....	29
Appendix C.....	30
Examples.....	30
Hardware Configuration	30
Appendix D.....	34
Driver and Software Installation.....	34

CHAPTER 1

Getting Started

General Computer Environment

The minimum required system is as follows:

- Windows® 2000 SP4, XP or Vista 32-bit
- Available PCI slot or USB port

Backing Up the Software

It is strongly advised that a backup of any important data files be created.

Introduction

Schedule Manager is designed for use with Med Associates modules to collect and analyze data gathered from chambers. Schedule Manager can collect and display real-time data gathered from up to 8 chambers at a resolution of 10 ms or better. Besides providing a real-time display, all of the accumulated data is saved to disk for post-statistical analysis. Schedule Manager will also create data files for use in the SoftCR Pro Cumulative Recorder software (Med Associates, Inc. Cat. No. SOF-722) for graphical printouts.

CHAPTER 2

Running Schedule Manager

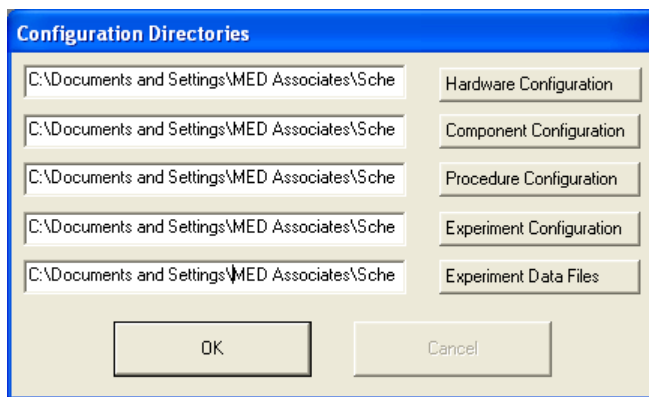
Complete the steps in this chapter to run an experiment using Schedule Manager. Some of these steps are only necessary the first time the application is used.

1. Select Configuration Directories

When the Schedule Manager software application is opened for the first time the Configuration Directories screen will appear. If the directories for each item listed on the screen are acceptable, click **OK**. If they are not, click the button associated with the directory and browse to the desired location.

This screen may also be accessed by selecting **File | Directories**. After the Configuration Directories screen is closed, the Hardware Setup screen appears.

Figure 2.1 – Configuration Directories Screen

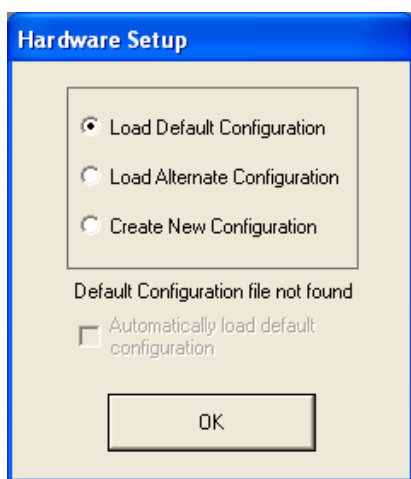


2. Hardware Setup

The Hardware Setup screen allows the user to select which hardware configuration to load. Select a hardware setup option and click **OK**.

- If **Load Default Configuration** is selected, the Schedule Manager main screen will appear. This should be the most commonly used hardware configuration.
- If **Load Alternate Configuration** is selected, an Open File window will appear. Select the configuration file (*.cfg) to use and select **Open**. The Schedule Manager main screen will appear.
- If **Create New Configuration** is selected the user may create a new hardware configuration. Refer to Chapter 3, Creating a New Hardware Configuration in this manual for more information.

Figure 2.2 - Hardware Setup Screen



3. Create a New Component

If necessary, create a new component(s). Follow the directions outlined in Chapter 4, Creating a New Component.

4. Create a New Procedure

If necessary, create a new procedure using existing components. Follow the instructions outlined in Chapter 5, Creating a New Procedure.

5. Run an Experiment

Run an experiment by loading a procedure into each active chamber. Follow the instructions outlined in Chapter 6, Running an Experiment.

CHAPTER 3

Creating a New Hardware Configuration

Create a New Hardware Configuration by selecting **Create New Configuration** from the Hardware Setup Screen (Figure 2.2). The Med Card Setup screen will appear.

Med Card Setup

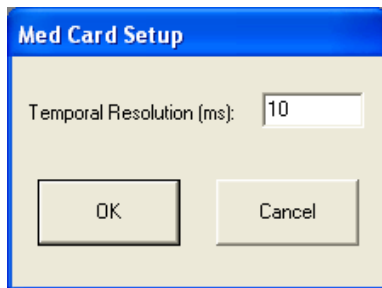
The Med Card Setup screen allows the user to set the temporal resolution, which determines how often the program will process inputs and outputs.

This value can be between 2ms and 1000ms.

One important note is that the temporal resolution will dictate how often outputs occur. For example, an output is set up that occurs every 7ms, and the temporal resolution is set to 10ms, that output will only occur every 10ms.

Enter the desired temporal resolution and click **OK** and the Interface Configuration screen will appear.

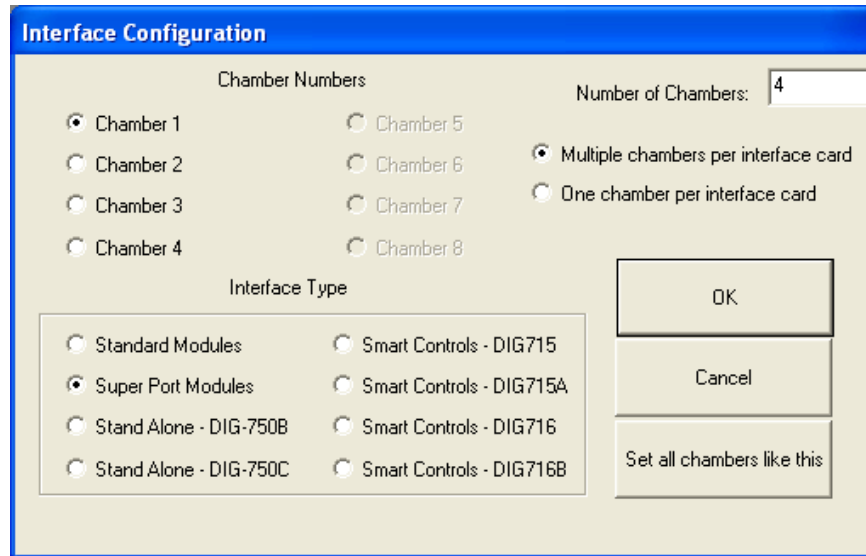
Figure 3.1 - MED Card Setup Screen



Interface Configuration

The interface configuration allows the user to define the type of interface cards and the number of chambers being used. Refer to Figure 3.2.

Figure 3.2 - Interface Configuration Screen



The **Interface Configuration** dialog box is used to set up the interface for the chambers. It includes the following elements:

- Chamber Numbers:** Radio buttons for Chamber 1 through Chamber 8. Chamber 1 is selected.
- Number of Chambers:** A text box containing the value 4.
- Interface Type:** Radio buttons for Standard Modules, Super Port Modules, Stand Alone - DIG-750B, Stand Alone - DIG-750C, Smart Controls - DIG715, Smart Controls - DIG715A, Smart Controls - DIG716, and Smart Controls - DIG716B. Super Port Modules is selected.
- Multiple chambers per interface card:** Radio buttons for Multiple chambers per interface card (selected) and One chamber per interface card.
- Buttons:** OK, Cancel, and Set all chambers like this.

Enter the number of chambers being used. Then click on each Chamber Number and select the Interface Type that is being used with that specific chamber. Or click **Set all chambers like this** to set the Interface Type for all chambers in the system.

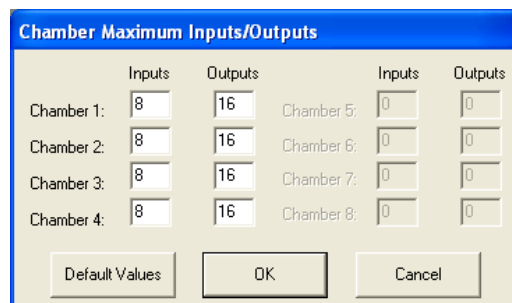
Click **OK** to save changes and proceed to the Chamber Maximum Inputs/Outputs screen.

NOTE: Enabling more chambers than will be used can cause extra work when modifying the chamber configurations.

Chamber Maximum Inputs/Outputs

The Chamber Maximum Inputs/Outputs screen allows the user to assign the number of inputs and outputs for each individual chamber. Refer to Figure 3.3.

Figure 3.3 - Chamber Maximum Inputs/Outputs



The **Chamber Maximum Inputs/Outputs** dialog box allows users to configure the number of inputs and outputs for each chamber. It features a table with the following data:

	Inputs	Outputs		Inputs	Outputs
Chamber 1:	8	16	Chamber 5:	0	0
Chamber 2:	8	16	Chamber 6:	0	0
Chamber 3:	8	16	Chamber 7:	0	0
Chamber 4:	8	16	Chamber 8:	0	0

At the bottom, there are three buttons: Default Values, OK, and Cancel.

Enter the number of Inputs (0-8) and Outputs (0-16) wired to each chamber. Click **Default Values** to set the number of Inputs and Outputs to the defaults values based on the interface type.

Click **OK** to save changes and proceed to the Input/Output Labels screen.

NOTE: Only those chambers defined in the "Configure Interface" window are active. The remaining chambers are "grayed out" and disabled.

Input/Output Labels

The Input/Output Labels screen allows the user to assign specific labels to each input and output. Assigning specific labels does not affect the data gathered by Schedule Manager; however, it is strongly recommended that this feature be used. Components, procedures, and the run time display will all become more meaningful and easier to utilize with specific labels.

Figure 3.4 - Input/Output Labels Screen

Inputs		Outputs	
1.	Left Lever Rsp	1.	Left Stim Lite
2.	Rt Lever Rsp	2.	Rt Stim Lite
3.	Not Used	3.	Pellet Feeder
4.	Not Used	4.	Not Used
5.	Not Used	5.	Not Used
6.	Not Used	6.	Not Used
7.	Not Used	7.	House Light
8.	Not Used	8.	Not Used
		9.	Not Used
		10.	Not Used
		11.	Not Used
		12.	Not Used
		13.	Not Used
		14.	Not Used
		15.	Not Used
		16.	Not Used

Default Labels OK Cancel

Click **Default Labels** to change all of the labels to their default names. Inputs are labeled "Input_#" and outputs are labeled "Output_#", where # is the input or output number.

Enter the desired labels, click **OK** to save and proceed to the Chamber Configuration screen.

Chamber Configuration

The Chamber Configuration screen is the core of the hardware configuration. It contains all of the ports, bits, and offsets needed for Schedule Manager to read and write to the input and output interface cards. A separate window is provided for each "Active" test chamber. Refer to Figure 3.5.

Figure 3.5 - Chamber Configuration Screen

The screenshot shows the 'Chamber 1' configuration window. It is divided into two main sections: 'Inputs' and 'Outputs'. Each section has a table with columns for 'Port', 'Bit', and 'Offset'. Below these tables are controls for 'ANL-926' (a checkbox), 'Port' (a text box with '790'), and 'Node' (a text box with '0'). At the bottom are buttons for '<< Previous', 'Next >>', 'Set All Chambers to Defaults', 'OK', and 'Cancel'.

Inputs			
	Port	Bit	Offset
1. Left Lever	780	0	0
2. Rt Lever Rsp	780	0	0
3. Not Used	780	0	0
4. Not Used	780	0	0
5. Not Used	780	0	0
6. Not Used	780	0	0
7. Not Used	780	0	0
8. Not Used	780	0	0

Outputs			
	Port	Bit	Offset
1. Left Stim	780	0	0
2. Rt Stim Lite	780	0	0
3. Pellet	780	0	0
4. Not Used	780	0	0
5. Not Used	780	0	0
6. Not Used	780	0	0
7. House Light	780	0	0
8. Not Used	780	0	0
9. Not Used	780	0	0
10. Not Used	780	0	0
11. Not Used	780	0	0
12. Not Used	780	0	0
13. Not Used	780	0	0
14. Not Used	780	0	0
15. Not Used	780	0	0
16. Not Used	780	0	0

☐ ANL-926 Port: 790 Node: 0

<< Previous Next >>

Set All Chambers to Defaults

OK Cancel

If a previous configuration is being modified and previous settings have just been modified, other than the I/O labels or the MED card screen, consider using the **Set All Chambers to Defaults** button. This will fix any gaps or zeros the previous screens may have created. However, if there are special settings in the configuration, this button will reinitialize all of the chambers indiscriminately. If this is a new configuration, it will be done automatically.

The chamber configuration screen requires the following information:

Table 3.1 - Chamber Configuration Screen Data

Item	Description
Port	The port address of the interface card.
Bit	The bit value on the interface card representing the input or output.
Offset	The offset value on the interface card. For standard cards and SmartCtrl inputs, this value is -1.
ANL-926	Check to use an ANL-926 with this chamber.
ANL-926 Port	The port address of the ANL-926 card.
ANL-926 Node	The offset address of the ANL-926 card.
Previous (button)	Changes the display to show the previous chamber.
Next (button)	Changes the display to show the next chamber.
Set All Chambers to Defaults (button)	Computes all of the port, bit and offset information for all of the usable chambers. Schedule Manager uses the data given from the previous screens to compute this information.

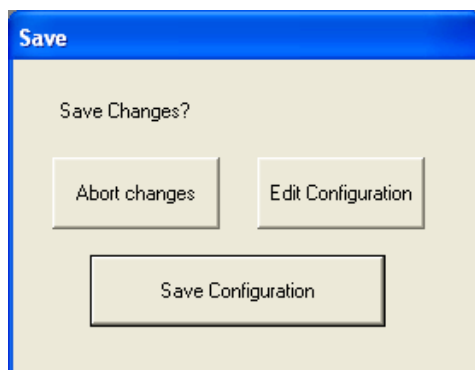
Once the chamber configuration is complete, click **OK**. The screen shown in Figure 3.6 will appear.

Click **Abort Changes** to delete all changes and cancel the creation of a new hardware configuration.

Click **Edit Configuration** to return to the MED Card Setup screen (Figure 3.1).

Click **Save Configuration** to name and save the configuration.

Figure 3.6 – Save Changes Screen



CHAPTER 4

Creating a New Component

The component is a building block of a procedure. To create a new component select **Component | New Component** and the screen shown in Figure 4.1 will appear.

Figure 4.1 - Component Main Menu Screen

Begin by entering a Comment. This Comment will be used to identify this component. Next, select the Schedule Type from the pull-down menu. The schedule types are as follows:

Table 4.1 - Schedule Types

Schedule Type	Description
Simple	A component using a simple schedule type will only have one schedule operating. In the case of Schedule Manager, this is schedule A.
Concurrent	A concurrent schedule is two or more simple schedules operating simultaneously. These schedules operate on different inputs and can use the same or different reinforcements.
Tandem	A tandem schedule produces two linked simple schedules beginning with Schedule A. Once completed, Schedule A links to Schedule B without reinforcement. A reinforcement occurs only after both schedules have been completed.

Select the file type for each schedule. The file types are as follows:

Table 4.2 - Schedule Manager File Types

Abbreviation	Full Name	Description
FR	Fixed Ratio	The subject must produce a user-defined number of correct responses in order to receive a reinforcement.
VR	Variable Ratio	This schedule is similar to a fixed ratio schedule, but instead of the reinforcement being contingent on a specific number of correct responses, it varies around a user-defined mean. After each reinforcement, Schedule Manager will compute a new ratio based on a normal distribution with a mean and standard deviation specified by the user.
RR	Random Ratio	The reinforcement is based on the probability entered. The probability is out of 10,000; so for example if 2,500 is entered, there is a one in four chance that the reinforcement will be given after a correct response.
FI	Fixed Interval	The first response after a user specified interval is reinforced. Following reinforcement, the interval time resets and the process is repeated.
VI	Variable Interval	This schedule is similar to a fixed interval schedule, but instead of the fixed interval time, the interval time varies with a mean and standard deviation specified by the user.
RI	Random Interval	This schedule is similar to a fixed interval schedule, but the user defines the probability of a reinforcement occurring.
FT	Fixed Time	The reinforcement is solely based on a user-defined time. After the specified time, a reinforcement is given. The inputs do not have any impact on reinforcement in this schedule.
VT	Variable Time	This schedule is similar to the fixed time schedule, but the interval time varies with a mean and standard deviation set by the user.
DRH	Differential Reinforcement High Level	Only reinforces correct responses that occur within a user specified time interval since the last response. Each correct response resets the interval time. If the interval time expires without a correct response, no reinforcement is given. The subject must respond again within the interval time in order to be reinforced. This interval time is usually short.
DRL	Differential Reinforcement Low Level	Only reinforces responses made after a user specified interval time. If a response is made before the interval time has elapsed, no reinforcement is given and the interval time is reset. Only waiting until the interval has elapsed, then responding will cause the subject be reinforced.
EXT	Extinction	Records responses, control stimuli, and produces SoftCR links without reinforcement.

Input Specifications

Next click the **Input Specifications** button and the screen shown in Figure 4.2 will appear. The input specification screen allows the user to assign each input as a **Correct**, **Incorrect**, or **Count Only**. Notice that the labels entered on the Input/Output Labels screen (Figure 3.4) appear here, simplifying the identification of each input.

Click **OK** to save changes and return to the Component Main Menu screen (Figure 4.1).

Figure 4.2 - Component Input Specification

Description	Schedule 1	Schedule 2	Schedule 3	SoftCR
Left Lever Rsp	Correct	None	None	Event 0
Rt Lever Rsp	Incorrect	None	None	Event 1
Not Used	None	None	None	None
Not Used	None	None	None	None
Not Used	None	None	None	None
Not Used	None	None	None	None
Not Used	None	None	None	None
Not Used	None	None	None	None

OK Cancel

Reinforcement Specifications

Next click the **Reinforcement Specifications** button and the screen shown in Figure 4.3 will appear. A reinforcement will occur when each schedule ends. This screen allows the user to define what the reinforcement type and duration will be, as well as whether or not to save the reinforcement as and Event or Pip in the SoftCR data file.

Select the output that should be used as primary reinforcement from the Primary Reinforcement pull-down menu. Notice that the labels entered on the Input/Output Labels screen (Figure 3.4) appear here, simplifying the identification of each output.

Next enter the duration of the primary reinforcement. A secondary reinforcement may be assigned to active when the primary reinforcement ends. Select the desired secondary reinforcement from the Secondary Reinforcement pull-down menu and enter the desired reinforcement duration.

Both primary and secondary reinforcements can be saved as a SoftCR event. Select the desired SoftCR event for each reinforcement.

Click **OK** to save changes and return to the Component Main Menu screen (Figure 4.1).

Figure 4.3 - Component Reinforcement Screen

The screenshot shows a dialog box titled "Component Reinforcements" with a blue header. It contains three sections for "Reinforcements for Schedule 1", "Reinforcements for Schedule 2", and "Reinforcements for Schedule 3". Each section has four controls: "Primary Reinforcement" (a pull-down menu), "Reinforcement Time" (a numeric input field and a unit pull-down menu), "Secondary Reinforcement" (a pull-down menu), and "Secondary SoftCR" (a pull-down menu). For Schedule 1, the settings are: Primary Reinforcement: Left Stim Lite, Reinforcement Time: 5 seconds, Secondary Reinforcement: Pellet Feeder, Reinforcement Time: 5 milliseconds, Primary SoftCR: Event 0, and Secondary SoftCR: None. For Schedules 2 and 3, all settings are set to "None". At the bottom of the dialog are "OK" and "Cancel" buttons.

Schedule	Primary Reinforcement	Reinforcement Time	Secondary Reinforcement	Reinforcement Time	Primary SoftCR	Secondary SoftCR
Schedule 1	Left Stim Lite	5 seconds	Pellet Feeder	5 milliseconds	Event 0	None
Schedule 2	None	0 milliseconds	None	0 milliseconds	None	None
Schedule 3	None	0 milliseconds	None	0 milliseconds	None	None

Output Specifications

Next click the **Output Specifications** button and the screen shown in Figure 4.4 will appear. The component output screen allows the user to assign which outputs to either turn on, turn off, or blink for the duration of the component, as well as whether or not to save the output as and Event or Pip in the SoftCR data file.

Select **Off**, **On** or **Blink** from the pull-down menu associated with the desired output. Notice that the labels entered on the Input/Output Labels screen (Figure 3.4) appear here, simplifying the identification of each output.

Select the desired SoftCR event for each output that is used.

Click **OK** to save changes and return to the Component Main Menu screen (Figure 4.1).

Figure 4.4 - Component Output Configuration Screen

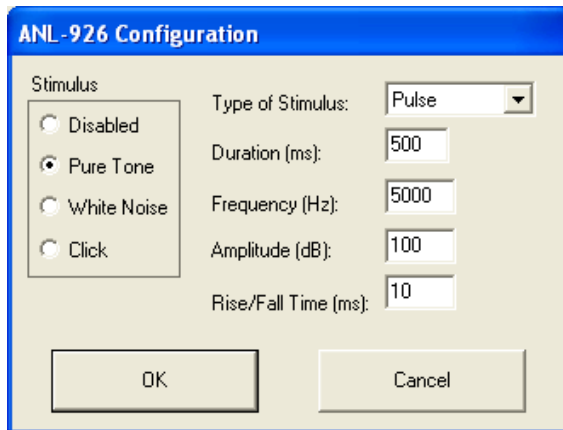
Description	Status	Blink Time (ms)	SoftCR
Left Stim Lite	Off	500	None
Rt Stim Lite	Off	500	None
Pellet Feeder	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
House Light	On	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None
Not Used	Off	500	None

ANL-926 Specifications

If an ANL-926 Programmable Audio Generator is being used, click the **ANL-926 Specifications** button and the screen shown in Figure 4.5 will appear. The ANL-926 configuration screen allows the user to setup the ANL-926 for this component. If the ANL-926 is used, it will turn on at the beginning of the component.

Make the desired selections and click **OK** to save changes and return to the Component Main Menu screen (Figure 4.1).

Figure 4.5 - ANL-926 Configuration Screen



The image shows a dialog box titled "ANL-926 Configuration". It contains a "Stimulus" section with four radio buttons: "Disabled", "Pure Tone" (which is selected), "White Noise", and "Click". To the right of these buttons are five input fields: "Type of Stimulus:" with a dropdown menu showing "Pulse", "Duration (ms):" with the value "500", "Frequency (Hz):" with the value "5000", "Amplitude (dB):" with the value "100", and "Rise/Fall Time (ms):" with the value "10". At the bottom of the dialog are two buttons: "OK" and "Cancel".

Saving Changes

Once the component information has been entered, click the **Save and Exit** button to save the component. Enter a component file name. The component file will be saved with a *.cmp extension.

Click the **Abort Changes** button to cancel all changes and close this screen.

CHAPTER 5

Creating a New Procedure

A procedure is a list of components that are linked together by a user-defined path. To create a new procedure, select **Procedure | New Procedure** and the screen shown in Figure 5.1 will appear.

On the procedure screen the Component List will include the components used in the procedure. The number on the left is the component ID number, and on the right is the file name of the component.

The buttons on the bottom left of the screen allow the user to insert and remove components, insert repeat loops and start/end blocks, and view SoftCR links.

On the right-hand side of the screen are the component exiting conditions. These exiting conditions determine when a component ends, and which component is run next.

Figure 5.1 - Main Procedure Screen

The screenshot displays the 'Main Procedure' window. At the top, a blue header bar contains the title 'Main Procedure'. Below the header, the 'Procedure File' field is set to 'New Procedure'. The main area is divided into two columns. The left column, titled 'Component List', contains an empty list box with up and down arrows and a vertical scrollbar. Below this list are five buttons: 'Insert Component', 'Insert Repeat Loop', 'Insert Start/End Block', 'Remove Item', and 'View SoftCR Links'. The right column, titled 'Component Exiting Conditions', contains five checkboxes, each followed by a horizontal line for text entry: 'Incorrect Response:', 'Time:', 'Reinforcement 1:', 'Reinforcement 2:', and 'Reinforcement 3:'. At the bottom of the window are two buttons: 'Save' and 'Abort'.

For example, in Figure 5.2 component fr-5.cmp will end and vr-30.cmp will begin when one of the following has happened:

- fr-5.cmp has run for 5 minutes
- fr-5.cmp has issued 5 reinforcements

Figure 5.2 - Procedure Example

Main Procedure

Procedure File:

Component List

- 1 -- fr-5.cmp
- 2 -- vr-30.cmp

Component Exiting Conditions

☐ Incorrect Response:

☒ Time: Exit on minutes
Path to follow:

☒ Reinforcement 1: Exit on counts
Path to follow:

☐ Reinforcement 2:

☐ Reinforcement 3:

Designing a Procedure

There are many ways to design a procedure. The following steps are recommended.

1. Create a rough sketch of the function of the desired procedure on paper. This will be the best way to keep on the right track.
2. Insert the components in the order that they are called, including Repeat statements when feasible.

NOTE: There is a limit of 32 total components, including repeats. A repeat only counts as one component.

3. Link components beginning at the top and working down. Add and delete components sparingly.

NOTE: If the procedure should remain in the same component until the end of the session time or the end of the experiment, create a link to itself using the component ID number.

4. Walk through the procedure and verify that all components go to the correct location.

5. Click **Save** and Schedule Manager verify that every link is legal. If an illegal link is found, it will indicate the ID number and what is wrong with the link.

NOTE: The user is responsible for the SoftCR links being correct. Schedule Manager cannot verify these links due to the variety of different possible applications. Use the "View SCR Links" button to help verify the SoftCR links.

Inserting a Component

Click the **Insert Component** button and the screen shown in Figure 5.3 will appear. Select the component and the component information will be displayed on the screen. Click **Add** to add the component to the procedure and return to the Main Procedure screen shown in Figure 5.1. Click **Cancel** to close this screen.

Figure 5.3 - Insert Component Screen

Insert Component

Component Filenames:
fr-5.cmp
test 2.cmp
test.cmp
vr-30.cmp

Schedule Type: Simple
Comment: FR-5

ANL-926 Specifications

Stimulus: Pure Tone	Type: Duration
Duration: 500 ms	Amplitude: 100 db
Frequency: 5000 hz	R/F Time: 10 ms

Schedule Specifications

1: Fixed Ratio Number of Responses: 5
2: None
3: None

Reinforcement Specifications

	Primary	Secondary
Reinforcement #1:	Left Stim Lite	Pellet Feeder
Reinforcement #2:	None	None
Reinforcement #3:	None	None

Outputs that are enabled: 7

Add Cancel

Defining Component Exiting Conditions

Exiting conditions must be defined for each component on the Component List. Select the exiting condition(s) desired for each component. Each condition must also have a Path to follow selected. The Path to follow options are as follows:

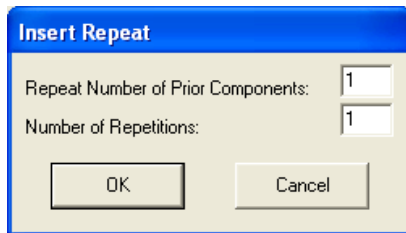
Table 5.1 - Path to Follow Options

Path to follow	Description
Next component	Proceeds to the next component on the Component List.
Go to Component ID	Enter the Component ID# to proceed to.
Probability Go to IDs	Click the Probability button and enter a probability for each component. The probability is the chance that the component will be randomly chosen to follow the current component.
Go to End	Ends the procedure at the end of this component.

Inserting a Repeat Loop

A single component or group of components may be repeated without having duplicate patterns of components. Repeat loops may be created to break up data into smaller time intervals for post analysis or for discrete trial applications. To insert a repeat loop click the **Repeat Loop** button and the screen shown in Figure 5.4 will appear.

Figure 5.4 - Insert Repeat Loop Screen

A dialog box titled "Insert Repeat" with a blue header. It contains two input fields: "Repeat Number of Prior Components:" with a value of "1" and "Number of Repetitions:" with a value of "1". At the bottom are "OK" and "Cancel" buttons.

Example:

To create a pattern of components that looks like this:

1, 2, 3, 4, 5, 2, 3, 4, 5, 2, 3, 4, 5, 6, 7, 6, 7, 6, 7.

The repeat feature can be used to reduce the list to the following:

1, 2, 3, 4, 5, R(4, 2), 6, 7, R(2, 2)

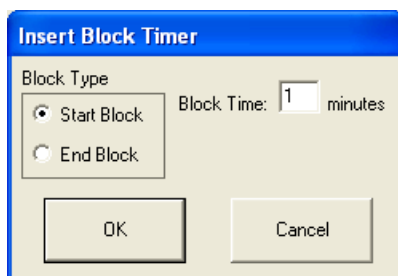
This notation reduces a 19-component procedure to a 9-component procedure that is much easier to produce and review.

NOTE: Schedule Manager does not accept nested loops. A nested loop is a loop within another loop. If an attempt is made to save a nested repeat loop, Schedule Manager will display an error message.

Inserting a Start or End Block

A block timer allows the user to run a set number of components for a certain amount of time. To insert a block timer click the **Insert Start/End Block** button and the screen shown in Figure 5.5 will appear.

Figure 5.5 - Insert Block Timer Screen

A dialog box titled "Insert Block Timer" with a blue header. It contains a "Block Type" section with two radio buttons: "Start Block" (selected) and "End Block". To the right is a "Block Time:" field with a value of "1" and the unit "minutes". At the bottom are "OK" and "Cancel" buttons.

Viewing SoftCR Links

The View SoftCR Links screen is designed to allow the user to verify that the procedure that has been created does not produce inappropriate or inconsistent SoftCR links. The view SoftCR links screen does not allow the user to change SoftCR links.

The View SoftCR Links screen is composed of the following information:

Table 5.2 - View SoftCR Links Data

Item	Description
Type of SoftCR Link	Step, Pip, Reset, or events. Refer to Appendix B for details on the different types of SoftCR links.
Inputs Box	Shows all components using that particular type of link in the input specifications.
Outputs Box	Shows all components using that particular type of link in the output specifications.
Reinforcement Box	Shows all components using that particular type of link in the reinforcement specifications.
Previous (button)	Backup to previous type of SoftCR link.
Next (button)	Advance to next type of SoftCR link.
Exit (button)	Return to the Main Procedure Screen.

Figure 5.6 - View SoftCR Links

View SoftCR Links

Type of SoftCR Link:

Inputs

Component Name	Input Number
fr-5.cmp	1
test.cmp	1
vr-30.cmp	2

Outputs

None found

Reinforcements

None found

<< Previous Exit Next >>

Removing Items from Component List

Any item may be removed from the component list by highlighting it on the list and clicking the **Remove Item** button. A verification message will appear.

Saving the Procedure

Save the procedure by clicking the **Save** button. Enter a procedure file name. The procedure file will be saved with a *.prc extension.

Click the **Abort** button to cancel all changes and close this screen.

CHAPTER 6

Running an Experiment

To begin an experiment, select **Experiment | Create New Experiment** and the Chamber Assignment screen shown in Figure 5.1 will appear. This brings up the chamber assignment form.

The chamber assignment screen is used to load a procedure for each individual chamber. This screen is displayed either when first entering an experiment or when requesting to load a procedure during execution of the experiment.

Select the procedure to load for Chamber 1 from the **Procedure Filename** pull-down menu. Enter the desired **Session Time**, **SoftCR Timing** (refer to Appendix B for more information regarding SoftCR Timing), **Subject ID**, **Group ID**, and **Experiment ID**. The default **Data Path/Filename** and **SoftCR Path/Filename** are shown. Click on either button to browse to enter a different path or filename. Enter any desired **Comments**.

Click **Next** to proceed to the Chamber Assignment screen for the next chamber or click the **Default** button to assign the same procedure and settings to all active chambers.

Once assignments have been made for each chamber, click the **Go To Experiment** button. The runtime screen, shown in Figure 6.2 will appear.

Figure 6.1 - Chamber Assignment Form

The screenshot shows the 'Chamber Assignment -- Chamber #1' window. It contains the following fields and controls:

- Experiment Filename:** A text box containing 'New Experiment'.
- Procedure Filename:** A pull-down menu showing 'example.prc' and a 'Default' button.
- Session Time:** A text box with '60' and the label 'minutes'.
- SoftCR Timing:** A pull-down menu showing 'Absolute'.
- Subject ID:** A text box containing 'None'.
- Group ID:** A text box containing 'None'.
- Experiment ID:** A text box containing 'None'.
- Data Path / Filename:** A text box containing 'C:\Documents and Settings\Jessica\My Documents\MED As'.
- SoftCR Path / Filename:** A text box containing 'C:\Documents and Settings\Jessica\My Documents\MED As'.
- Comment 1:** A text box containing 'None'.
- Comment 2:** A text box containing 'None'.
- Navigation Buttons:** '<< Previous', 'Next >>', 'Go To Experiment', 'Save Experiment', and 'Exit'.

The runtime screen is composed of eight boxes labeled Chamber 1 through Chamber 8. Each of these boxes represents one chamber and will run whatever procedure is loaded into it.

When the runtime screen is first opened, all chambers are stopped and waiting for the start command.

Figure 6.2 - Runtime Screen

The screenshot displays the 'Runtime Screen' titled 'Experiment Data Summary -- (No Experiment Filename)'. It contains eight panels, each representing a chamber (Chamber 1 through Chamber 8). Each panel includes a 'Procedure Name' field (set to 'example.prc' for Chambers 1-4 and 'Chamber Not Loaded' for Chambers 5-8), a '00:00:00' timer, and four input/output fields (Input #1, Input #2, Rein #1, Rein #2) all showing '0000'. Below these fields are 'Outputs:' labels, 'Loaded' or 'Not Used' status indicators, and 'PAUSE' buttons. At the bottom of the screen, there is a '00:00:00' timer and a row of buttons: 'Load', 'Start', 'Detailed', 'Display Values', 'Stop Chamber', and 'Exit'.

Chamber	Procedure Name	Timer	Input #1	Input #2	Rein #1	Rein #2	Status	Action
Chamber 1	example.prc	00:00:00	0000	0000	0000	0000	Loaded	PAUSE
Chamber 2	example.prc	00:00:00	0000	0000	0000	0000	Loaded	PAUSE
Chamber 3	example.prc	00:00:00	0000	0000	0000	0000	Loaded	PAUSE
Chamber 4	example.prc	00:00:00	0000	0000	0000	0000	Loaded	PAUSE
Chamber 5	Chamber Not Loaded	00:00:00	Not Used	Not Used	Not Used	Not Used	Not Used	PAUSE
Chamber 6	Chamber Not Loaded	00:00:00	Not Used	Not Used	Not Used	Not Used	Not Used	PAUSE
Chamber 7	Chamber Not Loaded	00:00:00	Not Used	Not Used	Not Used	Not Used	Not Used	PAUSE
Chamber 8	Chamber Not Loaded	00:00:00	Not Used	Not Used	Not Used	Not Used	Not Used	PAUSE

00:00:00

Load Start Detailed Display Values Stop Chamber Exit

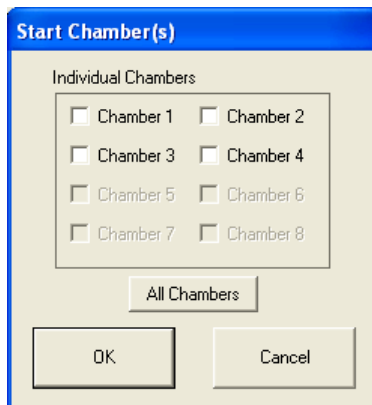
Changing the Loaded Procedures

If any changes need to be made to the procedures that have been loaded, click to **Load** button to return to the Chamber Assignment Form (Figure 6.1).

Starting Chambers

Click the Start button and the screen shown in Figure 6.3 will appear. Select the chamber(s) to start and click **OK**. There is a two second initialization period before data collection will begin.

Figure 6.3 – Start Chamber(s) Screen



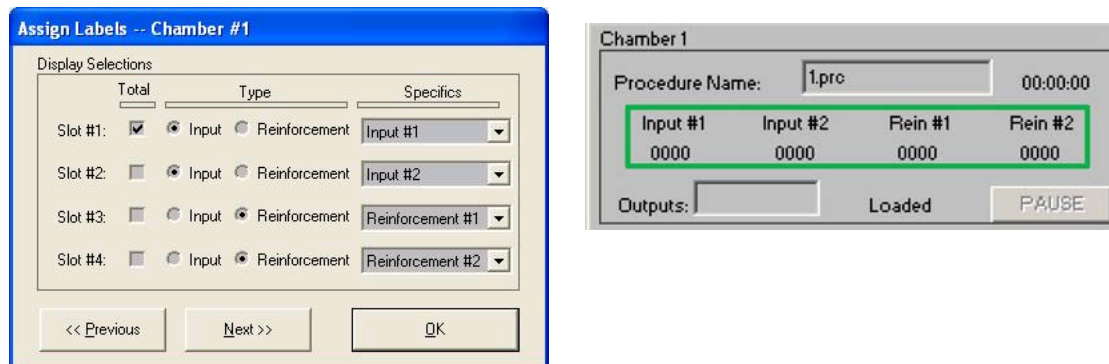
Viewing Detailed Chamber Information

Click the **Detailed** button to display how many inputs and reinforcements have occurred for each chamber.

Configuring the Runtime Screen

Click the **Display Values** button to select what to display for each Chamber on the Runtime Screen (Figure 6.2). If Total is checked, the total number of events during the experiment will be displayed, if it is not checked the number of events for the current component will be displayed. Figure 6.4 illustrates possible selections on the Assign Labels screen for Chamber #1, as well as the resulting display in the Runtime Screen.

Figure 6.4 – Example Assign Labels Screen for Chamber #1



Pausing Chambers

Each chamber on the runtime screen has a Pause button associated with it. Clicking Pause stops the data collection and timing for that chamber. A pause will be shown in the data output file. To resume the chamber, press the button again.

Stopping Chambers

Stop and Kill: This will stop the selected chambers and discard all data collected. Ensure that the session data is not desired prior to using the Stop and Kill button. Once OK is clicked in the selection screen, the data is gone forever!

Stop and Save: This will stop the selected chambers and save the data in the assigned data file.

APPENDIX A

Schedule Manager Menus

Selecting Menu Items

There are two ways to select a menu. The first is to use a mouse to click and pull the menu down, and then click on the item desired. The other way is to press and hold the ALT key and then press the underlined character in the menu, then press the underlined character of the item desired. For example, to exit the program, pull down the file menu by typing ALT-F, then type "x". Chapter 4 will describe in detail each window produced by the following menu selections.

Menu Items

File

Directories: Opens the Configuration Directories screen shown in Figure 2.1

Exit: Exits Schedule Manager

HardWare

Modify Hardware Configuration

This menu item is used to do a complete overhaul of the hardware configuration loaded at this time. The changes may be aborted at anytime by clicking on the cancel button in any of the stated windows.

Load Hardware Configuration

This allows the user to load a pre-existing hardware configuration.

Change Autoload Configuration

Brings up the hardware setup screen shown in Figure 2.2. This menu item is used to change the autoload configuration, reload a configuration or create a new configuration.

Partial Hardware Modification

Use this item to modify one of the following items in the hardware configuration:

Med Card Setup: Brings up the Med cards setup window

Edit I/O Setup: Brings up the I/O description window.

Configure Chambers: Brings up the chamber configuration window.

Component

New Component

This allows the user to create a new component and will bring up the component screen, shown in Figure 4.1. Follow the directions in Chapter 3 to create a component.

Modify Component

This allows the user to view or modify an existing component. It will bring up an Open window. Once a selection has been made, the component screen will be loaded with the data stored in the component. The modified component may be saved with the same filename or a new filename.

Procedure

New Procedure

This allows the user to create a new procedure and will bring up the procedure screen, shown in Figure 5.1. Follow the directions in Chapter 5 to create a procedure.

Modify Procedure

This allows the user to view or modify an existing procedure. It will bring up an Open window. Once a selection has been made, the procedure screen will be loaded with the data stored in the procedure. The modified procedure may be saved with the same filename or a new filename.

Experiment

Create New Experiment

This allows the user to create a new experiment and will bring up the chamber assignment form, shown in Figure 6.1. Follow the directions Chapter 6 to create an experiment.

Load/Modify an Experiment

This allows the customer to load and modify an existing experiment.

Utilities

View Current Config: This allows the user to view the current hardware configuration.

View Data File: This allows the user to view a data file.

Hard Copy: This allows the user to view any pre-existing hardware, component, procedure, or experiment configurations.

Test IRQ: This menu item will test the DIG-704 card. Use this menu item to make sure the Med DIG-704 interface card is working properly.

Clear Interface: This clears the hardware inputs and outputs.

Data Analysis: This changes how Schedule Manager prints out the experiment data.

Help

- Index:** This brings up information about Schedule Manager.
- Using Help:** This brings up Window's standard help on how to use the help index.
- About Schedule Manager:** Brings up the About screen, which contains the software version number and copyright information.

APPENDIX B

Definitions

File Types

Schedule Manager uses and creates several different data files. They are as follows:

Table B.1 - Data File Types

File Extension	Description
*.exe, *.dll, *.sav	Master files supplied with Schedule Manager. Do NOT modify these files. Modification of these files will damage the integrity of the program.
*.cfg	Hardware configuration files. Do not modify these files with text editors.
*.cmp	Component configuration files. Do not modify these files with text editors.
*.prc	Procedure configuration files. Do not modify these files with text editors.
*.exp	Experiment configuration files. Do not modify these files with text editors.
*.dat	Data files gathered from the Runtime screen.
*.tx1	Hard copy file of the hardware configuration.
*.tx2	Hard copy file of the component configuration.
*.tx3	Hard copy file of the procedure configuration.
*.tx4	Hard copy file of experiment configuration.

Types of SoftCR Links

Schedule Manager features SoftCR links. These links are used so that data may be viewed as a standard cumulative record with up to ten event pens. With these links, Schedule Manager produces an annotated ASCII data file (Format 1). The different types of links that can be created are as follows:

Table B.2 - Types of SoftCR Links

SoftCR Link	Description
Step	This causes the graph to move upward one "step".
Reset	This brings the graph back down to the baseline.
Pip	This causes a hash mark to appear on the graph when a reinforcement occurs.
Events 0 - 9	This produces a mark on the event table in the case of an input. In the case of an output the event pen will remain high while the output is in use.

Types of SoftCR Timing

In the procedure screen, the user can select the type of timing Schedule Manager is to record for SoftCR. There are three selections and they are as follows:

Table B.3 - Types of SoftCR Timing

Timing Type	Description
Disable	Disables ALL SoftCR links created in the components. Use this if SoftCR files should not be created.
Absolute	Saves the elapsed time for each response or event in tenths of seconds. This type is not recommended if running very long experiments since the times will get very large.
Relative	Saves the time between the current response or event and the last response or event. Each response or event resets the time to zero.

To clarify this, two samples of SoftCR files are shown below:

Absolute

0 :	0.50	0.51	23.1	35.1	43.1
5 :	45.60	45.50	47.2	47.2	55.3

Relative

0 :	0.50	0.51	23.1	12.1	8.1
5 :	2.60	0.50	2.1	0.2	8.3

APPENDIX C

Examples

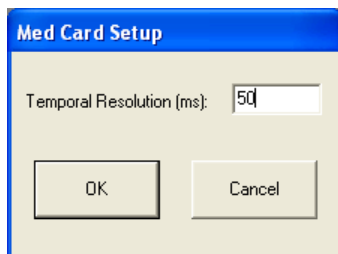
Hardware Configuration

Hardware configuration is generally performed only during the initial set up of a system. Modifications may be made if additional test chambers are added or when adding additional inputs or outputs to the original test chambers. To complete the hardware configuration, some basic information about the physical hardware must be known, including the port and offset setting for each interface module and the bit value assigned to each input and output for each chamber. MED Associates provides this information with all complete systems.

The following example demonstrates a hypothetical configuration that has six chambers with two inputs and two outputs for each chamber and a resolution of 50 ms. Two standard input cards and two standard output cards will be used for this example. The input cards are set for ports 780 and 781. The output cards could also be set at ports 780 and 781; however, for purposes of this illustration they have been placed at ports 782 and 783.

To get started, click **Hardware | Modify Hardware Configuration**. This will bring up the Med Card Setup screen. Set the **Resolution** to **50 ms** and click on the **OK** button.

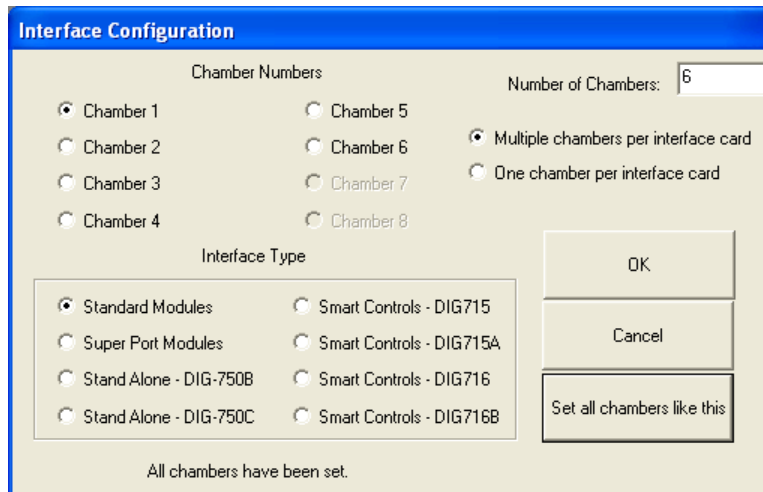
Figure C.1 - Med Card Setup



The Interface Configuration screen appears next. This screen allows Schedule Manager to compute the configuration defaults. This feature will typically save time and for the most part, the user will not have to make any changes.

Enter **6** as the **Number of Chambers**, click **Standard Modules**, then click **Set all chambers like this**. Schedule Manager will now use standard modules on six chambers. Click **OK** to continue.

Figure C.2 - Interface Configuration Screen



The **Interface Configuration** dialog box is shown. It has a title bar with the text "Interface Configuration". Inside, there are two main sections: "Chamber Numbers" and "Interface Type".

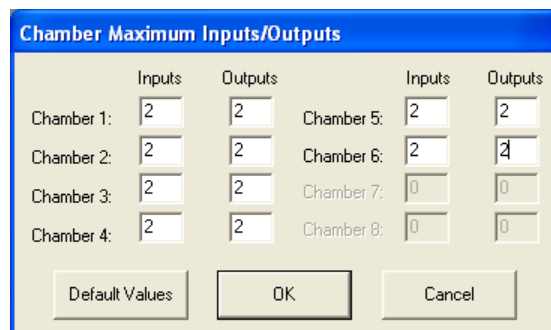
Chamber Numbers: This section contains eight radio buttons labeled "Chamber 1" through "Chamber 8". "Chamber 1" is selected. To the right of these is a text box labeled "Number of Chambers:" containing the value "6". Below the radio buttons are two more options: "Multiple chambers per interface card" (selected) and "One chamber per interface card".

Interface Type: This section contains eight radio buttons arranged in two columns. The left column has "Standard Modules" (selected), "Super Port Modules", "Stand Alone - DIG-750B", and "Stand Alone - DIG-750C". The right column has "Smart Controls - DIG715", "Smart Controls - DIG715A", "Smart Controls - DIG716", and "Smart Controls - DIG716B".

At the bottom of the dialog, there is a status bar that says "All chambers have been set." and three buttons: "OK", "Cancel", and "Set all chambers like this".

The Chamber Maximum Inputs/Outputs screen appears next. This screen allows the user to define how many inputs and outputs there are going to be for each chamber. For this example there will be two inputs and two outputs for each chamber. Enter **2** in each of the boxes. Notice that chambers seven and eight are disabled. Schedule Manager will not allow the user to modify these chambers because it was indicated earlier that six chambers are being used. Click on the **OK** button once all of the inputs and outputs have been changed.

Figure C.3 - Chamber Maximum Inputs/Outputs Screen



The **Chamber Maximum Inputs/Outputs** dialog box is shown. It has a title bar with the text "Chamber Maximum Inputs/Outputs". Inside, there is a table with four columns: "Inputs", "Outputs", "Inputs", and "Outputs". The first two columns are for "Chamber 1" through "Chamber 4", and the next two are for "Chamber 5" through "Chamber 8".

	Inputs	Outputs		Inputs	Outputs
Chamber 1:	2	2	Chamber 5:	2	2
Chamber 2:	2	2	Chamber 6:	2	2
Chamber 3:	2	2	Chamber 7:	0	0
Chamber 4:	2	2	Chamber 8:	0	0

At the bottom of the dialog, there are three buttons: "Default Values", "OK", and "Cancel".

The Input/Output Labels screen appears next. This screen is used to label the different inputs and outputs. For this example enter **Left Lever** and **Right Lever** for Inputs 1 and 2 and **Stimulus Light** and **Feeder** for Outputs 1 and 2. Once these labels are assigned, they will appear in future windows for designing components and procedures and make working with the forms presented in these windows easier. Click **OK** to proceed.

Figure C.4 - Input/Output Labels Screen

Inputs		Outputs	
1.	Left Lever	1.	Stimulus Light
2.	Right Lever	2.	Feeder
3.	Input_3	3.	Output_3
4.	Input_4	4.	Output_4
5.	Input_5	5.	Output_5
6.	Input_6	6.	Output_6
7.	Input_7	7.	Output_7
8.	Input_8	8.	Output_8

Buttons: Default Labels, OK, Cancel

Now the final hardware configuration screen has been reached. Schedule Manager created all of this information from the data given in last four screens. This screen shows the information for Chamber 1, with the default values loaded by Schedule Manager. The output interface cards should be on ports 782 and 783. Change the Output Port from 780 to 782 for Outputs 1 and 2.

Click **Next >>** to advance to the next chamber. Change the Output Port values to 782 for each chamber.

In this example, leave the bits at the default values. Once all of the output port numbers have been changed, the configuration is done. Click on the **OK** button. Schedule Manager permits multiple configurations that are useful if connecting different test chambers to the same interface modules. However, if only one configuration is to exist on the system, it is advisable to save it as DEFAULT.CFG. If using multiple files, it is still convenient to save the most frequently used configuration as DEFAULT.CFG.

Figure C.5 - Final Configuration Screen

Chamber 1

Inputs				Outputs			
	Port	Bit	Offset		Port	Bit	Offset
1. Input_1	780	0	0	1. Output_1	782	0	0
2. Input_2	780	0	0	2. Output_2	782	0	0
3. Not Used	780	0	0	3. Not Used	780	0	0
4. Not Used	780	0	0	4. Not Used	780	0	0
5. Not Used	780	0	0	5. Not Used	780	0	0
6. Not Used	780	0	0	6. Not Used	780	0	0
7. Not Used	780	0	0	7. Not Used	780	0	0
8. Not Used	780	0	0	8. Not Used	780	0	0
				9. Not Used	780	0	0
				10. Not Used	780	0	0
				11. Not Used	780	0	0
				12. Not Used	780	0	0
				13. Not Used	780	0	0
				14. Not Used	780	0	0
				15. Not Used	780	0	0
				16. Not Used	780	0	0

☐ ANL-926 Port: 790 Node: 0

<< Previous Next >>

Set All Chambers to Defaults

OK Cancel

NOTE: If an existing hardware configuration is modified, Schedule Manager will not automatically set items to their default values. That is only done when creating a new configuration. If items in the hardware configuration are modified (like the number of inputs), pay close attention to the chamber configuration screen. Use the **Set All to Defaults** button in the chamber configuration screen only when all chambers are changed and ports and bits are still organized sequentially; otherwise, values must be changed manually. An improper chamber configuration may result in input and output errors at run time.

APPENDIX D

Driver and Software Installation

Before beginning the installation, phone, fax or e-mail MED Associates with the registration information in order to receive the software installation password. This password will be necessary during the installation process.

Begin installation by placing the Schedule Manager CD into the CD-ROM drive. The screen shown in Figure D.1 will appear. Click **Install Schedule Manager** and the screen shown in Figure D.2 will appear.

Figure D.1 - Schedule Manager Main Screen



Click **Install** to begin installation. Follow the steps to complete the installation, entering the desired User Name, Company Name and Password when prompted. When installation is complete, the screen shown in Figure D.3 will appear.

Figure D.2 – Schedule Manager Installation Wizard



Click **Finish** to close this screen. A desktop shortcut to Schedule Manager was created during installation and may now be used to open the application.

Figure D.3 - Installation Complete

